

Innovative Responses to Urban Health Vulnerabilities in Sub-Saharan Africa

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Abstract

The high rates of urbanization amidst stagnating economies and poor governance have created a new face of abject poverty concentrated in over-crowded slum settlements in Africa's major cities. Emerging evidence demonstrates that poor residents in African cities often experience worse health vulnerabilities than many other segments of national sub-populations, including rural residents. Analysis of the major causes of poor health outcomes among the urban poor suggests that effective programs need to simultaneously address: issues of access, availability, and affordability of health services; environmental sanitation; improvement of personal hygiene; and livelihoods. This paper reviewed some of the most innovative experiences in addressing these health issues among the urban poor residents and draws lessons to inform discourses on design and implementation of sustainable responses to urban health vulnerabilities. One of the key lessons from the review is that best practices derived from rural experiments cannot be transplanted to poor urban settlements since these populations have different epidemiological profiles; rely on multiple, weak, and often informal medical services; have weak community solidarity; and are subject to social and legal isolation due to the fact that they live in "informal or illegal" settlements. Successful programs in addressing urban health vulnerabilities should have a long-term perspective, establish strong partnership with the local communities and local government officials, and adopt a multi-sector approach aimed at improving various aspects of people's lives. A major weakness in many interventions has been deficient capacity for documenting implementation processes and measuring the impact of interventions, which have undermined the potential for various programs to be objectively assessed for scale-up. More research obviously needs to be done to demonstrate cost-effective interventions to improve health outcomes among the urban poor. The urban poor also stand to benefit from non-place-based initiatives aimed at improving access to health services by the general poor population, such as waiver of hospital fees. However, the success of these programs has been limited by lack of objective criteria and mechanisms for assessing eligible clients, and poor flow of

information about the program to potential beneficiaries as well as health workers. The reviews covered in the paper demonstrate that carefully designed and implemented interventions can make substantive contributions in uplifting the well-being and reducing health vulnerabilities of the urban poor. Doing nothing about the escalating urban poverty and health crisis in sub-Saharan Africa is not an option anymore, since the welfare and health of slum residents will undoubtedly have far-reaching consequences on poverty alleviation programs and the achievement of the Millennium Development Goals. With increasing population mobility and globalization, the health problems and associated social ills that are rampant in poor urban communities (such as drug abuse, insecurity) are likely to filter to the regional and global stages.

Executive Summary

The high rates of urbanization, which are principally fuelled by rural-urban migration, amidst stagnating economies and poor governance, have created a new face of abject poverty concentrated in over-crowded slum settlements in Africa's major urban centers. Emerging evidence shows that poor residents in African cities often experience worse health vulnerabilities than other national sub-populations, including rural residents. The UN projections indicate that more Africans will be living in urban than rural areas by the year 2016; while estimates by UN-HABITAT show that about 70% of all urban residents in sub-Saharan Africa are likely to be living in abject poverty in slum settlements since they lack the basic amenities (water, sanitation, and electricity) that should be routinely provided in formal settlements in urban centers. These patterns and trends clearly indicate that doing nothing about the escalating urban poverty and health crisis in sub-Saharan Africa is not an option anymore, since the welfare and health of slum residents will undoubtedly have far-reaching consequences on poverty alleviation programs and the achievement of the Millennium Development Goals. With increasing population mobility and globalization, the health problems and associated social ills that are rampant in poor urban

communities (such as drug abuse, insecurity) are likely to filter to the regional and global stages.

Analyses of the underlying causes of urban health vulnerabilities suggest that effective programs need to simultaneously address: issues of access, availability, and affordability of health services; environmental sanitation; improvement of personal hygiene; and livelihoods. Slum dwellers are typically sicker than other sub-populations because they are exposed to adverse environmental conditions and tend to indulge in riskier health behaviors and practices (e.g., poverty-driven sexual practices, alcohol and drug abuse, etc.) than other groups, including rural residents. The urban poor also exhibit considerably higher mortality levels than the other groups because they are least likely to access preventive and curative medical care, despite their proximity to the best hospitals and clinics in urban areas. Personal hygiene practices are also compromised due to lack of basic amenities like water and sanitation, and lack of information. Given that interventions for addressing the key causes of high morbidity and mortality are pretty well known, the main challenge for improving urban health outcomes rests on the capacity and willingness of governments and development partners to ensure that the known interventions are accessible to the rapidly growing urban poor population. This paper reviewed some of the most innovative experiences in addressing these urban health vulnerabilities and draws lessons to inform discourses on design and implementation of sustainable responses to urban health vulnerabilities.

Interventions to address urban health problems have had limited impact because most of the interventions have been developed and piloted in rural settings and those imported to the urban poor settlements are often implemented on an ad-hoc basis; are focused on specific problems (rather than comprehensive approach); they overlap or have conflicting agendas; they have insufficient government involvement; and they lack rigorous process and impact evaluation in their designs. Urban poor settlements have different epidemiological profiles; rely on multiple, weak, and often informal medical

services; have weak community solidarity; and are subject to social and legal isolation due to the fact that they are mostly “informal or illegal” settlements. The review shows that successful programs for addressing urban health vulnerabilities should have a long-term perspective (the problems can not be addressed in a quick-fix approach), establish strong partnership with the local communities and local government officials, and adopt a multi-dimensional approach aimed at improving various aspects of people’s lives.

The urban poor stand to benefit from non-place-based initiatives aimed at improving access to health services for the general poor population, such as waiver of hospital fees. However, the success of these programs has been limited by lack of objective criteria and mechanisms for assessing eligible clients and poor flow of information about the program to potential beneficiaries as well as health workers. While many national intervention strategies, such as the Primary Health Care or the Integrated Management of Childhood Illnesses approaches, have been successfully implemented to improve health outcomes in some rural settings, they may not work as well in poor urban settings, not only for the reasons noted above, but also because the urban poor typically lack access to public health facilities through which most government initiatives are implemented.

A major weakness in many interventions targeting the urban poor has been weak process and impact evaluation capacity, which have undermined the potential for various programs to be objectively assessed for scale-up. Many of the programs operating in slums have scanty information about the target population and what impact their programs have had. There is, therefore, need to enhance methodologies for detecting and documenting health vulnerabilities as well as implementation processes and impact of associated interventions. Various facility-based and population-based health information methods can be used to detect and document urban health vulnerabilities. Facility-based methods include routine data collection through the Health Management Information System, facility-based surveys, and sentinel surveillance

systems. The main challenge of health facility-based methods is that a sizable percentage of those with a given disease may not visit health facilities. In addition, reports from health facilities are often incomplete because of poor supervision, lack of feedback to clinics for health workers to see the value of the information they collect, and due to heavy clinical workloads that health workers have. Population-based methods include censuses, household surveys, vital registration systems, community event registers, and qualitative studies. Cross-sectional surveys are less suited for detecting and documenting short-term urban health vulnerabilities, but very useful in monitoring changes in key indicators over a number of years, if they are carried out regularly. Longitudinal demographic surveillance systems (DSS) that continuously collect, analyze and disseminate information hold the best promise for detection and documentation of urban health vulnerabilities, in a manner that allows for effective and timely control action. Panel surveys carried out at regular intervals are also useful since they can help assess trends; they are much cheaper and easier to manage than continuous longitudinal studies like the DSS; and can be applied on a much wider scale. Because all data systems have their own limitations and strengths, it is important to find innovative ways to triangulate various data sources when monitoring health vulnerabilities and assessing intervention programs to address them.

The reviews covered in the paper demonstrate that carefully designed and implemented interventions can make substantive contributions in uplifting the general well-being and reducing health vulnerabilities of the urban poor.

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1. Introduction

1.1 Urbanization in sub-Saharan Africa

Between 2000 and 2030, urban areas of the less developed regions will absorb 95 per cent of the world's population (UN-HABITAT, 2003b). Urban growth will bring two billion people into cities in the Global South, doubling their size to about four billion people (UN-HABITAT, 2003a). The UN estimates that as many as 55% of the world's poor currently live in urban areas; this proportion is expected to increase as urban population rises (Tibaijuka, 2002). Addressing urban poverty has become one of the most important challenges of the 21st century. The population of cities is exploding across the globe and in particular throughout the developing world as massive numbers of migrants move from rural areas in search of employment and a better life.

In sub-Saharan Africa, some of the highest urbanization rates, often exceeding five per cent per annum, have been witnessed over the last three to four decades (Todaro 1989; Obudho, 1997). According to United Nations (1998) projections, the majority of the population of sub-Saharan Africa will be urban residents by 2016. In addition to the growing number of "mega-villages" with little or no health advantage over rural areas, the number of cities with over one million inhabitants increased from zero to 30 since 1950 (Brockhoff and Brennan, 1998). The unprecedented growth of urban areas in the context of poor economic performance (World Bank, 2000), poor planning, lack of low-income housing, and poor governance has created a new face of poverty whereby a significant proportion of urban populations live in abject poverty. Most of the urban poor residents live in overcrowded slums and sprawling shantytowns in most African cities. Slums have sprung up in virtually all African cities, often on illegally occupied land that is unsuitable for human settlement.

Slums in the major cities of Africa are often characterized by reliance on cash economy, overcrowding, poor environmental sanitation, lack of security, lack of social and health services, greater indulgence in risky sexual practices, social fragmentation, and high levels of migration

(APHRC, 2002a). Longitudinal data collected by the African Population and Health Research Center (APHRC) in the slums of Nairobi indicate that slum dwellers predominantly rely on informal and unstable sources of income for their survival. For example, data collected in 2004 show that less than a quarter of the men were in salaried employment or running established businesses, while the rest were either in casual employment where they were paid on a day-to-day basis, or were in informal trading or economically inactive. The situation for women was even worse: about half were not economically active, while less than 10% were in salaried employment or established trading.¹ Estimates by UN-HABITAT show that about 70% of all urban residents in sub-Saharan Africa are likely to be living in abject poverty in slum settlements since they lack the basic amenities (water, sanitation, and electricity) that should be routinely provided in formal settlements in cities and urban centers (UN-HABITAT, 2003).

Urban population growth in sub-Saharan Africa is principally driven by rural-urban migration of young adults seeking jobs and other livelihood opportunities in urban areas, although the natural increase and change of urban boundaries also play key roles (NISER, 1997; Anderson, 2001).² Given the increasingly poor living conditions and livelihood opportunities that are observed in most metropolitan centers in the region (Brockhoff and Brennan, 1998; World Bank, 2000), it appears paradoxical that many rural residents continue to flock to urban areas. For instance, despite the fall in employment opportunities associated with the economic

¹ These estimates are derived from unpublished data from the Nairobi Urban Health and Demographic Surveillance System, implemented in two slum settlements by APHRC.

² Nevertheless, natural increase is still an important contributor to urban population growth in the region given that urban residents exhibit high fertility rates, even if urban fertility rates have fallen considerably below rural rates over the last two decades or so. Expansion of urban and city boundaries is another contributor to the increase in urban populations, although its relative contribution has not been systematically measured across the region.

downturn in Kenya from the 1980s, Nairobi's population continued to grow at about 5% per year between 1969 and 1999 (GOK, 2000). In fact, some scholars have argued that the UN projections that the majority of the population of sub-Saharan Africa will be urban residents by 2016 are unlikely to be attained in the absence of a sustained positive turn-around in the state of urban economies around the continent (Bocquier, 2003 2005; Cohen, 2004, United Nations, 1998). However, the fact that the urban and city growth rates have persisted at such high levels despite the sustained economic downturn experienced over the past two to three decades underscores the need for better understanding of the enduring linkages between rural and urban lifestyles and economies and how these affect health dynamics in cities as well as rural areas.

1.2 Health conditions of the urban poor

The understanding that urban dwellers are better off and in much fewer numbers than their rural counterparts led to the traditional neglect of the health challenges facing the urban poor (Ronsmans et al., 2003; Zulu et al., 2002; Magadi and Curtis, 2003). However, the neglect of urban poor populations cannot be justified any longer, since urban populations constitute significant proportions of national populations and the rural-urban differentials in health are declining and reversing in some cases. While rural-urban differentials in health are well-recognized, the widening inequalities in health between the poor and non-poor in major urban areas (as well as relative to the poor in rural areas) of sub-Saharan Africa have not been fully recognized. Recent evidence shows that the urban poor in various parts of sub-Saharan Africa exhibit higher morbidity, poorer access to health services, higher mortality, and riskier sexual practices than other population sub-groups, including rural residents (Madise et al., 2003; Taffa, 2003; Hacker and Ryan, 2003; Amuyunzu-Nyamongo and Taffa, 2004). For instance, the infant mortality rate of 91 per 1,000 live births in informal settlements (slums) of Nairobi City in 2000 was higher than in any other parts of Kenya: 39/1,000 in Nairobi as a whole, 57/1,000 in urban Kenya, and 76/1,000 in rural Kenya. Similar differentials are noted in under-five mortality rates of 156/1,000 in the slums of

Nairobi: 88/1,000 in urban areas and 109/1,000 in rural parts of Kenya (APHRC, 2002a).

The excessively high infant and child mortality rates experienced by slum dwellers appear to result from poor immunization coverage and high prevalence of respiratory tract infections, diarrhea and malaria, and possibly HIV/AIDS in a setting where access to health services is very poor. Only 48% of slum children aged 12-23 months were fully vaccinated, versus 65% nationally. Prevalence of fevers among children under three years of age was 64% in the slums, 42% in rural areas, and 38% in Nairobi as a whole. More dramatic differentials are noted for diarrhea, whereby 32% of slum children suffered from the disease, compared to only 17% in rural areas and 13% in Nairobi as a whole (APHRC, 2002a). The unique vulnerability of slum children to infectious diseases is further shown by the fact that children from households in the richest wealth quintile in the slums of Nairobi were more likely to have diarrhea than children from households in the poorest wealth quintile in rural Kenya (Ndugwa and Zulu, forthcoming). Clearly, the most substantial threats to the health of the urban poor come from their overcrowded housing amidst filthy conditions characterized by uncollected garbage, unsafe water, and deficient and overflowing sewers (Garret, 2001).

The most devastating aspect of urban poverty and residence in slum settlements is arguably the sustained exposure to environmental hazards resulting from lack of appropriate toilet facilities, garbage disposal facilities, exposure to industrial pollution, and congestion in cramped spaces where personal safety and mental health are seriously jeopardized (UN-Habitat, 2003)³. Slum residents identify water and environmental sanitation factors as their most critical health problems. For instance, 72% of slum residents in Nairobi consider lack of safe water, no proper toilets, poor drainage, and garbage disposal systems as the most critical health problems

³ UN-HABITAT (2003). Improving statistics for measuring development outcomes: The need to accommodate rapid urbanization in the national statistical plan.

facing their communities (APHRC, 2002a; see also Amuyunzu-Nyamongo and Taffa, 2004). Health services and HIV/AIDS came up as the fifth and sixth most important health concerns behind the environmental sanitation issues (APHRC, 2002a).

APHRC's extensive research in Kenya and exploratory work in Ghana and Malawi demonstrate how these environmental issues manifest themselves in slum dwellers' health status. Although the majority of slum residents report in surveys that they have access to toilets, many housing structures do not have toilets at all, and those available are often shared by many households, which causes serious maintenance and hygienic problems. Because the toilets are often too filthy, some people defecate in polythene bags that are thrown into garbage dumps in a practice commonly referred to as "flying toilets" in the slums of Nairobi. Children often defecate in alleys and open spaces, making them very vulnerable to infectious diseases. Earlier efforts to provide "communal" latrines have been hampered by poor management, vandalism and grabbing of the facilities by some community members. In order to resolve the maintenance problem, some landlords and community-based organizations have introduced paid toilet facilities whose user fees are often too high for the majority of the residents (APHRC, 2002b).

Poor access to safe and adequate water is a serious problem in the slums in all the three countries. Supply of piped water in the slums is very irregular or unavailable, and residents (mostly women) often stand in queues for long periods of time to buy water from vendors who charge higher prices than what non-slum dwellers in the city pay (Matrix Development Consultants, 1993). Many of the water distribution lines in the slums are illegally connected, using plastic pipes that often burst, leading to water wastage and contamination. Finally, open garbage disposal and drainage systems, which are a major physical characteristic of slum locations, constitute serious hazards to the health of slum dwellers, especially children who play in these dumps and drainage trenches. The uncollected garbage often blocks drainage trenches, making

the slums muddy and impassable during rainy seasons. Even in situations where attempts have been made to reduce garbage dumps through community cleanups, there is a problem of locating a final waste disposal site (APHRC, 2002b).

Despite close proximity to health facilities in the city, health service utilization for childhood illnesses is considerably lower in slum settlements than in other parts of Kenya. For instance, treatment of fevers at health facilities was 65% and 51% lower in the slums than in Nairobi as a whole and rural areas of Kenya, respectively (Mugisha 2003; APHRC 2002a; see also Falkingham, 2003). Many residents of slum settlements in Nairobi report lack of money as the main reason why they do not use health services to treat childhood illnesses. Yet, the extent to which such poor health-seeking behavior is due to poor income as opposed to other factors, such as cultural beliefs, maternal education, lack of trust in services and service providers, and knowledge of existing services, is not evident.

The deteriorating living conditions in which the majority of urban dwellers in Africa are living are considered the main cause of the increasing intra-urban health inequities and the worsening health indicators in urban Africa (see for example APHRC, 2002; Songsore and McGranahan, 1993; Brockerhoff and Brenan 1998; Potts, 1995; Satterthwaite, 1995; Harpham, 1996). Additionally, while the improvement in rural health indicators was the main driver for the declining rural-urban differentials in child mortality during most of the last half of the last century, the recent decline in the urban advantage in health outcomes is largely attributed to stalling or worsening urban indicators in Africa's rapidly growing cities (Gould 1998; UN-HABITAT, 2003). Experience from the West suggests that the direction and extent of rural-urban differentials in child mortality depend on the level and rate of urbanization as well as the urban areas' economic capacity to generate employment opportunities. If the projected increase in African urbanization continues without substantial improvement in economic performance and urban governance, it

seems inevitable that the urban health disadvantage that characterized the major Western cities at the turn of the last century due to overcrowding and poor sanitation facilities (see for example, Winter, 1979; Williams and Galley, 1995) will become the lasting new order in Africa (Gould, 1998).

Because of high population mobility within countries and across national borders in the context of increasing globalization, the welfare and health of slum residents will undoubtedly have far-reaching consequences on regional and national progress in development and also on the achievement of the Millennium Development Goals (for example, goals to improve maternal and child health, reduce extreme poverty, improve the environment, and achieve gender equity). Programs to improve child health in slum areas need to address: issues of access, availability, and affordability of health services; environmental sanitation; the need to intensify education efforts to promote better personal hygiene and child care practices; and livelihood opportunities.

1.3 Urban health systems and intervention opportunities

The multiplicity of the underlying causes of high morbidity and mortality among the urban poor underscore the need for a comprehensive and multi-sectoral approach in interventions to improve their health outcomes.⁴ A major limitation in improving the deteriorating health conditions among the urban poor in sub-Saharan Africa is lack of empirical evidence to guide policy deliberations on the key determinants of poor health outcomes and determination of up-

⁴ While not all urban poor are resident in informal settlements, their concentration in slum settlements in Africa's major cities provides a unique opportunity for targeted and place-based interventions to improve their health outcomes and general well-being. However, in order to have a substantive improvement in health outcomes of those living outside geographically defined areas like slums, it is important to identify non-place-based interventions that would impact on the poor in general.

scalable and cost-effective interventions to improve the situation.

Over the past few years, however, national health institutions, leading research organizations, and international organizations such as the World Bank, the United Nations, the World Health Organization and the International Society of Urban Health have been focusing on clarifying linkages between urban poverty and the extent of inequities between the urban poor and other sub-groups in sub-Saharan Africa. Their efforts are providing evidence that can guide policies aimed at building resilience among the urban poor through improvements in the overall population health system. Importantly, any examination of the public health system impacting urban populations will require an understanding of the enduring linkages between rural and urban lifestyles given migratory dynamics, especially in sub-Saharan Africa (Coast, 2006; Coffee et al., 2007). This is especially true when considering the health vulnerabilities and status of poorer communities moving between rural and urban environments. Using this dynamic continuum as a foundational understanding, the key to improving population health in cities will be supporting and diffusing a greater understanding of how the built and natural environments to which urban populations are exposed impact their predilection to particular health vulnerabilities.

While these projects and studies are yet to adequately clarify the pathways through which urban poverty and underlying living conditions are linked to poor health outcomes, they have highlighted key health, environmental, and behavioral features of the urban poor that are likely to be responsible for the poor health outcomes. For instance, a recent study of morbidity and cause of death data from the slums of Nairobi shows that about 81% of the excessively high burden of disease among children in these settlements is due to known causes that can be addressed by readily available and cost-effective interventions including provision of essential drugs, HIV/STI control, immunization, Integrated Management of Childhood Illnesses (IMCI), TB DOTs, safe

motherhood, injury care, and malaria prevention (Kyobutungi et al., 2006).

Additionally, place-based interventions to improve water, sanitation and hygiene practices have been shown to be very effective against childhood illnesses. Interventions such as provision of piped water and treatment of water using chlorination have been shown to result in significant reductions in the prevalence of diarrhea (Esrey et al. 1985 & 1991; WHO 2002; Fewtrell et al. 2005). Oral rehydration therapy (ORT) and recommended home fluids (RHF) are associated with significant reduction in fatalities due to diarrhea (Santosham et al. 1997). Other low-cost interventions that have been demonstrated to reduce childhood illness include hand-washing, use of soap, and proper disposal of human and animal faecal matter (Stanton and Clemens, 1987; Daniels et al. 1991; Boot and Cairncross, 1993).

The main challenge for improving health outcomes among the urban poor, therefore, rests on the capacity of governments and development partners to ensure that the known interventions are accessible to this rapidly growing proportion of national populations. Nevertheless, interventions to address urban health problems have had limited impact because most of the known place-based interventions have been developed and piloted in rural settings, and those imported to the urban poor settlements are often implemented on an ad hoc basis; are focused on specific problems (rather than on a comprehensive approach); they overlap or have conflicting agendas; they have insufficient government involvement; and they lack rigorous evaluation of the impact of their interventions. For example, while many place-based intervention strategies, such as the Primary Health Care approach or the IMCI, have been successfully implemented to address poor health outcomes in some rural settings, very little is known about how such programs would work in poor urban settings characterized by use of multiple (and mostly informal) and cash-based sources of health care, extremely poor environmental sanitation, and less structured social organization.

Application of non-place-based interventions such as removal of cost-sharing schemes and subsidies in specified medications has had limited impact on the urban poor because they typically lack access to public health facilities where such interventions are often implemented. Health care delivery in the slums is dominated by informal small-scale private facilities that are typically housed in one- or two-room structures, managed by under-trained and in some cases unqualified personnel. Evidence from APHRC's work in informal settlements in Ghana, Kenya, and Malawi shows that many of these clinics in slums lack basic facilities such as diagnostic equipment, supplies, and drugs and they charge quite high fees (APHRC 2002b). Slum residents rely on these facilities since public health facilities in the vicinity of the slums are often in a poorer state than these private clinics and lack key supplies such as medications. Slum dwellers also utilize traditional health care practitioners partly because of their low service charges and possibility of payment by installment or in kind. First-line service providers are usually quack drugstores that often sell expired drugs, which leads to high prevalence of untreated illnesses, irrational drug use and long-term impoverishment. Community members and service providers reported that efforts to improve the functioning of health facilities should focus on expansion and renovation of facility premises, training personnel, and improving drug supplies and medical equipment to enhance their diagnostic capacity. Some of the challenges in implementing proven interventions such as the IMCI for child survival in urban slum settlements are lack of knowledge of the local epidemiological profiles, the low capacity of health care systems, weak community solidarity, and low commitment by local policy makers who often view slums as illegal settlements (APHRC, 2002b).

Study objectives

Urbanization generally reflects, and contributes to, economic growth and economic development, but it also presents several major challenges in relation to: land use; provision of shelter, infrastructure and social services; and employment. Poverty and social exclusion in urban areas, which are often underestimated and

less well understood, are interlinked with these challenges. A number of innovative interventions in urban development policy and practice have been piloted to help address these challenges and move urban populations in the developing world closer to the MDGs. The difficulty has been with scaling-up, adapting, and mainstreaming these innovations. This paper presents a review of relevant debates and extant innovative responses to urban health vulnerabilities in Africa. The paper is prepared as a background piece to the Bellagio Urban Summit on Innovations for an Urban World to be held in July 2007. It documents specific local and regional innovative responses that have the promise of up-scalability in cities and outlines key challenges such interventions may face. The paper focuses on efforts to improve environmental sanitation and curative health services through public health initiatives in urban sub-Saharan Africa and addresses the following thematic areas:

1. Identifying physical innovations in the built and natural environments that increase prevention of urban health vulnerabilities;
2. Identifying non-place-based and material innovations for improving access to health care by the poor in the context of user-fee policies;
3. Examining methodologies for detecting and documenting urban health vulnerabilities, preventive interventions, treatment, detection, promotion and rehabilitation; and
4. Evaluating the conditions or circumstances under which such innovative interventions might improve population health in different national income-level contexts.

2. Definition of Keywords

Urban population health: is concerned with how urban or city environment affects health. It covers the relationship between characteristics of the urban environment and health as well as social and economic factors that are exogenous to the individual but shape his/her health outcome. It therefore includes the social and physical environment and systems of health and

social services as the primary determinants of the health of urban populations (Vlahov et al., 2005).

Urban population health systems: all the activities whose primary purpose is to promote, restore or maintain health for urban residents. This includes health services (professional delivery of personal medical attention, traditional healers, and all use of medication, whether prescribed by a provider or not). It also includes public health activities such as health promotion and disease prevention, and other health-enhancing interventions like road and environmental safety improvement. It excludes activities whose primary purpose is something other than health (WHO Centre for Health Development, 2005). The definition also encompasses all key health providers including public and private ones as well as formal and informal ones. Most of the examples covered in the study address water and sanitation because of its central role in affecting health outcomes among the urban poor, as explained above.

Innovation: is used to mean the introduction of something new and useful, for example introducing new methods, techniques, or practices or new or altered products and services. Scholars have identified a variety of types of innovation which the review paper will attempt to address as well. These are: (a) business model innovation, which involves changing the way business is done in terms of capturing value, for example, health service provision; (b) marketing innovation, which is the development of new marketing methods with improvement in product design or packaging, product promotion or pricing, for example in health promotion; (c) organizational innovation, which involves the creation or alteration of business structures, practices, and models, and may therefore include process, marketing and business model innovation; (d) process innovation, which involves the implementation of a new or significantly improved production or delivery method; (e) product innovation, which involves the introduction of a new good or service that is substantially improved. For example, this may include improvements in functional characteristics, technical abilities, ease of use, or

any other dimension; (f) service innovation, which relates to services rather than to products; and (g) supply chain innovation, where innovations occur in the sourcing of input products from suppliers and the delivery of output products to clients⁵.

Physical innovation in population health systems: innovation in the built and natural environment, such as roads, building, sewerage systems, etc.

Non-physical innovation in population health systems: innovations in non-built and natural environment, for example, social engineering and behavior change innovations, etc.

Impact of extant innovation: the extent to which the innovation improves the health of the target population.

3. Methods

To identify innovations that address urban health vulnerabilities in Africa and methodologies for detecting and identifying them, the following three considerations were assessed: availability of adequate documentation; assessment against a pre-defined set of inclusion/exclusion criteria; and the source of information on the innovation.

Availability of adequate documentation

For each innovation, information was gathered on the following: (a) detailed description of the innovation; (b) process of implementation; (c) feasibility, feasible improvements and cost of implementation; (d) effectiveness; (e) who the innovators and champions are.

- a) Detailed description: This covers the detailed description of the characteristics of promising innovations, including its content, delivery setting, intensity of implementation (for example, the number of hours of training or education involved), context, and human, financial and other resource requirements. The degree to which an innovation is effective and applicable in other settings may be dependent on the specific context in

which it is being implemented, such as the local or national socio-cultural context, the specific time period, or the specific group involved. If an intervention has been highly effective in different but relevant contexts, this increases the likelihood that it may also be effective in a new context (Victora et al., 2005);

- b) *Process of implementation*: In evaluating the evidence provided by a particular study or program, it is essential to have detailed information on the process of delivery of the intervention that establishes the extent and quality of delivery as well as evidence on intermediate indicators that support the theoretical basis of the intervention (Wight and Obasi, 2003). For example, for an innovation based on training of mothers to reduce health vulnerability of children, process information might include data on the number and quality of sessions taught, attendance rates at these sessions and a qualitative assessment by the participants of the sessions' usefulness, appropriateness and relevance. The information collected by implementers or practitioners in their daily work can be valuable in offering insights into the daily operations of an innovation and into the kinds of evidence practitioners draw on in their work. Additionally, issues such as political commitment, feasibility, cost and acceptability to implementers and gatekeepers will increase in importance;
- c) *Feasibility, feasible improvements and cost*: This addresses the feasibility and cost of its implementation and any feasible improvements, including its sustainability and acceptability to different stakeholders. Possibility of increasing impact: the attractiveness of the innovation will depend to a large extent on whether it can be expanded to cover a wide population, can be replicated in other settings and/or adapted to other environments; Improvement of capacity of government to react to unexpected emergency scenarios: for the buy-in and support from government and several bilateral and multilateral institutions, the extent to

⁵ <http://en.wikipedia.org/wiki/Innovation>

which innovations are able to improve the ability of the government to reduce health vulnerabilities across the city will be paramount.

- d) *Effectiveness*: This covers the effectiveness of the innovation in reducing urban health vulnerabilities. It should be noted that of all the components of documentation that we examined, effectiveness of the programs was the least comprehensive. This is reflective of weak monitoring and evaluation capacities in most intervention programs in Africa.
- e) *Who the innovators and champions are*: For effective targeting, it is important to know who the innovators and champions are and how they interacted to achieve the outcomes.

Sources of information

Innovations to address urban health vulnerabilities were identified from a wide range of sources, but with particular focus on the following four categories:

Published literature (Pubmed, Cochrane Library, Google Scholar).

International organizations and groups engaged in addressing urban health vulnerabilities (UN-HABITAT, World Health Organization, World Bank, etc.);

Groups or alliances working to address urban health vulnerabilities (Cities Alliance, Knowledge Network on Urban Setting based in Kobe, Japan, International Society on Urban Health review series on current work related to urban health); and

Individual organizations and scholars that are involved in urban health vulnerabilities based in and outside of sub-Saharan Africa (experts in specific issues, community-based groups, etc.);

4. Direct Responses to Address Health Vulnerabilities Among the Urban Poor

We reviewed about 20 innovations that focused on addressing urban health vulnerabilities across sub-Saharan Africa. The innovations reviewed can be classified into seven broad categories: (a) multi-sector approach with active community empowerment, (b) slum upgrading, (c) public-private partnerships, (d) linking innovations to address urban health vulnerability to another

activity the community sees as necessary or more appealing such as income generation or sports, (e) commercialization of public good (e.g., of water) to improve supply to the urban poor, (f) health promotion, and (g) resettlement outside the city. Information on commercialization of public services is scanty.

One key and promising innovation that emerged from the review is the multi-sector approach with active community empowerment. This approach has been applied in Benin, Senegal and Kenya (Raphael and Alassane, 2004, APHRC, 2003, Gaye and Diallo, 1997). Because of the complexity of the problems facing the urban poor and the multiplicity of the underlying causes of poor health, we focus on multi-sector approaches with active community empowerment as these appear to have the greatest potential to improve health outcomes in this population. In the following text, we provide examples of the application of this innovation for each of the three countries and based on these examples, we highlight lessons learned and offer some recommendations.

4.1 Empowering poor urban communities to improve sanitation services (Rufisque Township, Dakar, Senegal)

4.1A Innovation

The innovation for the Rufisque Township was to empower urban population communities through: (a) democratic decision-making and (b) problem-solving so as to mature into a body capable of interacting productively with the local authority and even with higher levels of government (Gaye and Diallo, 1997; Gaye et al., 2001). The project was set up primarily to improve sanitation, but also sought to improve income generating capacity, quality of life and the social status of beneficiaries, and reinforce the independence of the community and give people a sense of citizenship, through training and interaction between various groups. Because the innovation touched on several aspects of their lives, slum dwellers found it very appealing. The desired attributes were that the intervention should: (i) place technology at the service of human beings, as a tool which they master rather than a dominating, foreign or alien force that

they buy from other cultures at prices they cannot afford; (ii) establish a friendly, familiar technology that even poor people can afford and can control; and (iii) be replicated from community to community while addressing the challenges they face: creating new jobs, new skills, a new self-confidence and faith in the future.

4.1B Detailed description

The innovation was implemented in Rufisque, a small township outside Dakar, Senegal, targeting households within the neighborhood. The innovation covered a population of 52,338 inhabitants over 293 hectares of land in a mainly unplanned urban area outside Dakar. The challenge that was being addressed was lack of adequate and proper sanitation infrastructure. Contracted trucks that support sanitation in the neighborhood were unable to provide services because of the narrow roads and an inadequate number of trucks. Consequently, households were disposing their waste on the streets, open drains, on the beach or into the sea; use of conventional plumbing was minimal.

The innovation involved a series of activities that were improvements or adaptations of existing technology. Horse-drawn carts, a common local form of transport, were used for transportation instead of trucks that could not get through the few narrow roads. Disposal of water and sewerage was done using low-cost narrow plumbing pipes that were less than half the price of conventional pipes. Facilitators set up a purification and recycling center where young people treated and combined sewage, waste water and refuse to form compost manure for use in market gardens as a source of income. Purification was done with the use of water lettuce, which is common in the area and very cheap.

To facilitate the poor to pay for the services and improve their incomes in general, a revolving community fund was set up for mobilizing and managing local savings. Only households that were part of the sanitation project were eligible to apply for credit. Members made contributions, but further support came from subsidies from external partners. The program achieved an

impressive 90% repayment rate for loans because representatives of the local management committees worked with the communities to repay the loans.

4.1C Process of implementation

The planning of the innovation took close to three years, but the engagement with the community had been established six years prior. Between 1981 and 1988 (six years), dykes to stop the water from flooding the community were constructed. This period of engagement provided a rapport with the community. Plans for the innovation started in 1988, and it was only in 1991 that the implementation started. It took another three years for three district health committees (Lazaret, Afrat and Diokoul) to get fully involved in the innovation, in 1994.

Management is an important element of the implementation process. The local management committee was composed of the district health committee, district representatives, and representatives from local services and department bodies such as the health board. The innovation was run by elected local committees. Technical aspects were done by local people. This level of participation ensured buy-in by the community.

There was a multi-sectoral partnership, with each partner given clear responsibilities. The partners were ENDA-Third World, Canadian Host Country Participation Fund, Rufisque local authority and the community. The ENDA-Third World acted as project manager with overall responsibility for the implementation. It was responsible to funding institutions for reports and ensuring effective implementation. To local authority, it provided information on progress that allowed them to make major decisions regarding the innovation. It was responsible to the target groups to run practical courses at the purification plants and to ensure the innovation was in line with the city development plans. The international funding agencies were the Canadian-Senegalese Host Country Participation Fund (FCCS) and the European Union.

The Rufisque local authority formed an inspection and assessment committee made up of

elders or opinion leaders; provided land for the purification plant; provided a link to government departments and ministries; provided two staff members to work on the innovation; and assisted ENDA to organize the collection of liquid and solid waste in the districts covered by the scheme. The other key partner was the community, the beneficiaries of the innovation. The community held debates regarding plans and activities through community meetings, theater, mosque and other events. Women, local representatives, elders and young people were on the inspection and assessment committee and the joint committee. Water purification and household waste treatment plants were operated by male and female youth and local people contributed directly to the refuse collection service through payments to the cart driver.

All these arrangements were facilitated by an agreement signed between ENDA and the Rufisque local authority, which culminated in the formation of the local authority joint commission on environment-urbanization-public works in 1994. The city council also agreed to contribute towards the repayment of the loan for the plant.

4.1D Feasibility, feasible improvements and costs

The monthly expenditure for a horse and cart for refuse collection was an equivalent of US\$91 while monthly revenue was US\$162. This amount served 10-15 households per month in the community. An investment of an equivalent of US\$38.1 covered sanitation services (sewerage system, purification plant, door-to-door refuse collection). The average investment per head for refuse collection system was US\$0.5. Each beneficiary contributed US\$1 per annum for refuse collection. Funding for the community revolving fund was initially provided by external funding institutions but, has since been replaced by local revolving credit system.

4.1E Effectiveness on health

The effect on health is not well documented, and no evaluation was carried out. However, the project reports by Gaye and Diallo (1997) and Gaye et al. (2001) suggest that it reduced water and faecal-borne diseases (e.g., diarrhea and skin

diseases) but the extent cannot be established. In respect to other intended outcomes that affect urban health vulnerabilities, waste collection increased by 30% and the percentage of wastewater treated increased by 90%.

4.1F. Key lessons

- a) Utilization of local resources: The innovation adapted local technology and materials (use of horse and cart for refuse collection and the use of water lettuce for purification), and modification of commercially available resources while maintaining the required standards (the use of narrow pipes in the sanitation system).
- b) Program focus and benefits: The community must relate to the areas of focus and participate in defining the problems and interventions. When the innovation touches on several aspects of urban living, it is bound to be accepted and supported by the community. While sanitation was a clear challenge, the immediate challenge was that of survival, and therefore two elements of income generation and revolving fund greatly helped the innovation to take root.
- c) Long-term perspectives: All stakeholders need to understand that improving the urban health vulnerabilities is not a quick fix; funding and interest need to be sustained. In this particular case, it took close to 12 years to have tangible results.

4.2 Improving environmental sanitation and livelihoods (Ste Rita's neighborhood, Cotonou, Benin)

4.2A Innovation

The innovation for Ste Rita's neighborhood was multi-sectoral and was meant to empower the community for waste management (Raphael and Alassane, 2004). The specific aims of the innovation included: to develop a waste management system, to treat collected garbage in appropriate site, to promote job creation and to enhance dialogue with government and share the responsibilities for waste management. The program sought to empower urban poor

communities through (a) democratic decision-making and (b) problem-solving so as to mature into a body capable of interacting productively with the local authority and higher levels of government.

4.2B Detailed description

The innovation was implemented in Ste Rita's neighborhood (within Cotonou, Benin) to improve environmental sanitation among households in the community. About 2,700 households did subscribe to the program. Household and biomedical waste mixed with human excreta was buried in compounds, some thrown on the streets and channels, and unlike Rufisque, where there was at least some form of garbage collection, there was none in Ste Rita. The innovation was informed by data collected at the Bethesda Health Center, which pointed to repeat visits by patients with water- and faecal-borne diseases. The project came about when the hospital board assessed the preventative care system for the catchment area and decided to improve conditions that were predisposing the community to infectious diseases by assisting the community in taking control of all future responsibilities regarding sanitation.

Like with Rufisque, the innovation involved activities that were improvements or adaptations of existing technology. There were two main activities: education and waste collection activities. Education concentrated on health and environment, attempting to create a link between poor sanitary practices and health. In the training, government support was important, with ministry level officials, including ministers, attending some of the events to create impetus for the process.

The waste collection component had several important activities and lessons. First, the institution implementing the intervention bought a truck that was used for collecting and dumping of waste outside the community for recycling. Like in Rufisque, young people collected waste twice a week door-to-door using a cart made locally, and at compensations of 0.4 euro a month in 1994, 0.8 in 1995, 1.6 euro in 1999 and 2.4 euro in 2004. Later, the strategy was changed after it was realized that collecting

all garbage and transporting it was too expensive and also environmentally unfriendly. A mechanism was put in place to separate the garbage collected, organic from inorganic, in separate containers, with the organic materials being converted into compost, used within the community, and the inorganic transported. This saved 23.27 euros per ton in transport of waste. The Ministry of Environment supported the activities and donated trucks, carts, containers and gloves. In addition, 75 NGOs created a network to facilitate the process, with Oxfam Quebec helping them to build capacity.

The innovation also involved a community lending scheme, with US\$3,000 in 1996 and more than US\$1,000,000 in 2004, with more than 3,000 beneficiaries. Initially though, like in Rufisque, external support was important to jump-start the loan scheme, but it is now self-reliant. No information is available on either the management of the community lending scheme or the repayment rates.

4.2C Process of implementation

It took about 18 months to gain consensus on activities to be undertaken in the program. It started with meeting local authorities to brainstorm what to focus on and various modalities for managing the program, including how the committee that was in charge of the program would be chosen. The community chose to start the project by filling holes in the streets where people were throwing their waste, as well as cleaning the area.

During the implementation, the implementers made frequent visits to the waste management departments in Cotonou and Porto-Novo, which were kept informed and relied upon for advice on various implementation issues.

Final adoption of the project was done by a technical committee composed of the representative of the French Corporation, Finance Minister of Benin and the United Nations Development Program in Benin. The project was flexible and adjusted as circumstances and new information arose, while the general direction remained the same. The project had an effective partnership with clearly stated

responsibilities. The French government provided financial support; the municipality provided both financial and technical support; international financing NGOs involved provided financial support; the community-based organizations provided community support; the Ministry of Environment provided materials, job training and political support; a grassroots organization involved provided support in helping the local population to organize themselves; a private company provided technical support in compliance with the financial contract of the World Bank; and finally the missionary agency for development provided both financial and technical support. The community approach involved meetings, discussions and dialogue between local authorities, women groups, youth groups, and public servants. The goal was to allow the community to take control of all aspects of the project in future. No information is available though on how the day to day running of the project was done.

4.2D Feasibility, feasible improvements and costs

The innovation started with US\$ 85,200 in 1997 and expanded the operations to US\$ 886,797 five years later. The NGOs involved used 700 workers and half a million euros a year. Initially, the program bought a truck to transport garbage about 20 miles away from the community, but later removed sand and other organic materials to reduce the transportation cost.

4.2E Effectiveness on health

No health impact in terms of disease or health condition was documented. However the level of garbage collection improved from 20% in 1995, to 50% in 1997, and more than 90% in 2004.

4.2F Key lessons

- a) Utilization of local materials and resources: Use of local materials and resources, including human is bound to energize the community and affect a broad spectrum of people's lives.
- b) Program focus and benefits: Addressing general well-being issues (even when focused on sanitation, for instance) is bound to increase chances of success.

- c) Long-term perspective: Improving the urban health vulnerabilities is not a quick fix—it takes time—and when funding for such program is not sustained, the benefits are likely to be lost. In this case, it took close to 18 months to gain consensus on what needs to be done. More importantly, flexibility with goals and activities is critical in sustaining the engagement of the community and other key stakeholders.

4.2G Appropriateness for scale-up

The program has been replicated in several cities in Benin: seven neighborhoods in Cotonou, seven in Porto-Novo, three neighborhoods in Parakou, seven in Kandi, three in Come and three in Aplahoue. Experiences have also been exported to Togo and Congo. Details of how the scale-up was done and performed were not available.

4.3. Improving child survival through a comprehensive package involving improvements in health services, environmental sanitation, behavior change (The Nairobi Urban Health and Poverty Partnership, Nairobi, Kenya)

4.3A Innovation

The Nairobi Urban Health and Poverty Partnership (NUHPP) was to set up cost-effective health and livelihood interventions to reduce the excessively high child mortality rates among slum residents of Nairobi city by at least 20% (i.e., to levels prevalent in rural areas of Kenya) over a five-year period (APHRC, 2002b, APHRC, 2002a). The innovation was designed to reduce child morbidity and mortality through:

- a) Inducing behavior change (health-seeking behavior, home-based care for sick children, and child feeding practices) (Berggren and Wray, 2002, KA et al., 2002);
- b) Strengthening the capacity of public health facilities (improving their capacity to manage childhood illnesses) (Bryce et al., 2003, Gareth et al., 2003);

- c) Improving water and sanitation systems (use simple technologies to improve effectiveness and lower cost of the current water and sanitation system) (Makoni et al., 2004);
- d) Improving household livelihoods (enroll slum residents into saving schemes, credit facilities, targeted skills training programs, and a tools bank to enable those with valuable artisan skills to generate income (Practical Action, 2007a). The initiative would also institute a community health insurance scheme that would serve as a risk-sharing mechanism for shielding people from critical income losses because of health care expenditures) (Hengjin et al., 2004);
- e) Providing evidence for policy (through ongoing demographic and health surveillance system and regular panel surveys covering the NUHPP areas);
- f) Fostering community participation and ownership of project activities;
- g) Engaging policy makers and program managers in government and civil society.

The components of the innovation are shown in Figure 1. This innovation has three key features, namely: (a) its multi-sectoral approach to seek solutions to multifaceted child health problems among the urban poor, (b) the innovative application of existing best approaches to form a “minimum package” of health and livelihood interventions with great promise to improve child survival, and (c) rigorous impact evaluation through a longitudinal research platform to generate an evidence base to inform policy dialogue in dealing with urban health and poverty issues.

4.3B Detailed description

The interventions were defined following four years of extensive research to determine the key challenges facing the urban poor and get input on potential interventions from community members, community-based organizations and service providers, government officials, and other stakeholders.

During the pilot stage of the project, three of the service interventions pillars were implemented: behavior change communication (training of mothers on child care practices and young people on hygienic practices); construction of toilets and water supply facilities; and training of health workers on management of childhood illnesses following the IMCI approach and infection prevention practices. The three components of interventions were implemented in the experimental site (slum of Korogocho), while only the strengthening of the health system’s capacity to manage childhood diseases using the IMCI approach was implemented in the comparison area (slum of Viwandani). The two-cell design would enable assessment of health gains, and associated costs, achieved by the project’s behavior change communication and environmental health on top of gains achieved from improving health services alone. The demographic surveillance system would provide baseline and post-intervention indicators in both the experiment and comparison areas.

4.3C Process of implementation

The innovation was governed by a Steering Committee, composed of heads of collaborating institutions, responsible for the policy direction of the project. A Task Force, made up of representatives from each partner organization would oversee the day-to-day running of the project. The management of the planned health and livelihood interventions was to rely on community support and participation. Through community management committees, local slum communities were involved at all levels of implementation of the interventions.

The partnership included: i) Program for Appropriate Technology in Health, responsible for the component of behavior change; ii) JHPIEGO (an affiliate of Johns Hopkins University), responsible for strengthening the capacity of public health facilities; iii) Intermediate Technology Development Group (ITDG, now Practical Action), responsible for water and sanitation interventions; iv) APHRC, responsible for monitoring and evaluation; v) the City Council of Nairobi, the government arm, responsible for providing social services in the city to ensure that the project was implemented

in line with government priorities and guidelines; and vi) the community leadership and CBOs, to foster community participation.

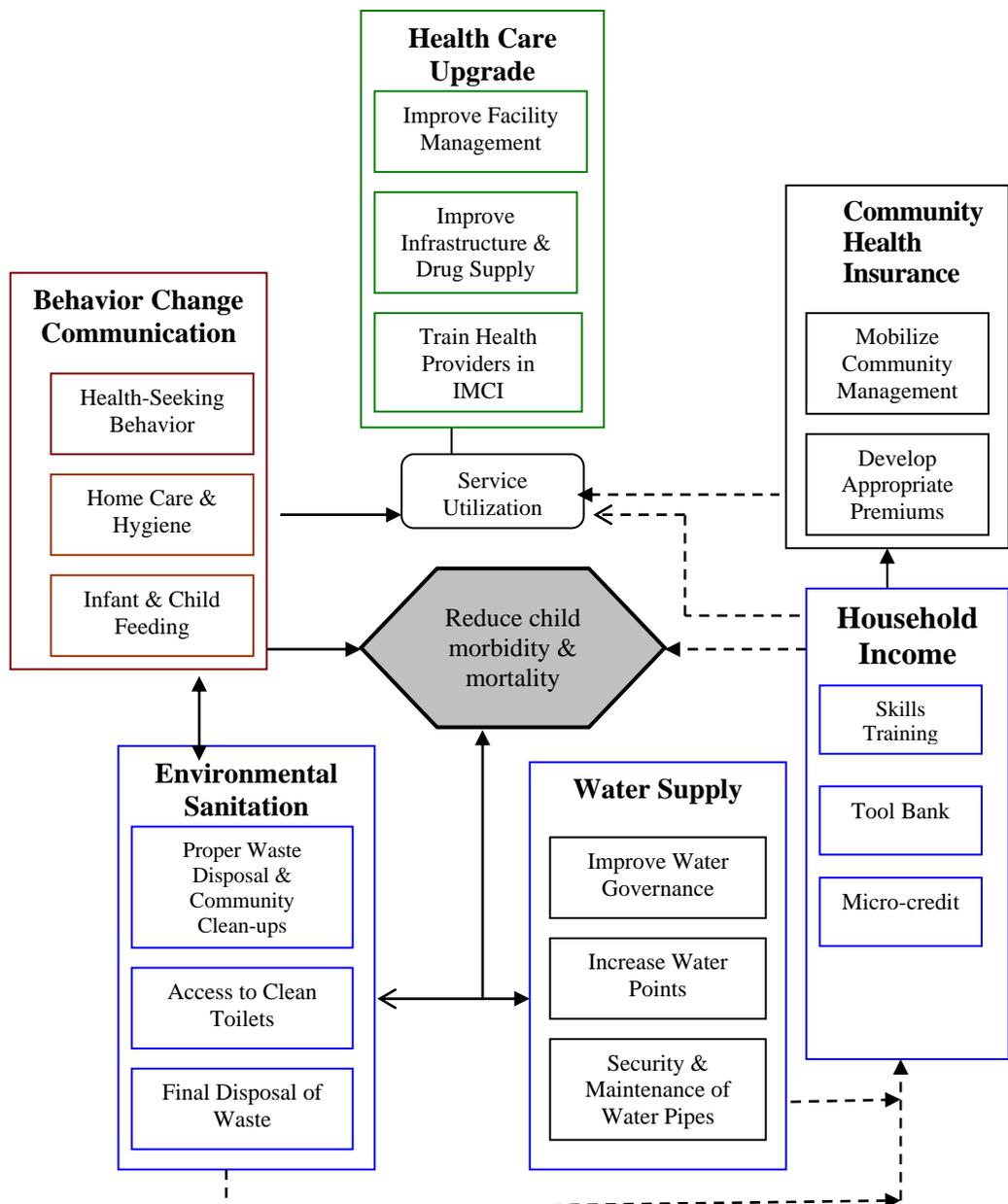


Figure 1: NUHPP Conceptual Framework NOTE: Broken lines refer to indirect effects of the interventions

4.3D Feasibility, feasible improvements and costs

The cost of the intervention was expected to be US\$1,329,241 for the two-year pilot period, but the pilot phase raised close to \$300,000 from the European Commission and the Embassy of Finland in Nairobi. The partnership is raising funds for the full-scale phase of the interventions.

4.3E Key lessons

- a) Feasibility: The pilot study in Kenya demonstrated that with community and local authority participation, interventions to improve child health are feasible in slum settings.
- b) Putting the community in charge: Progress in implementing the pilot interventions were hampered by the long time that it took to negotiate with the community leaders to provide land for the construction of the toilets and other facilities. The problem was resolved when the project changed its approach to work with existing youth and women's groups, as these groups were able to acquire the land and having them in the forefront gave the impression that this was a community project.
- c) Community mobilization: Another key lesson from the project was that it is difficult to get community participation on a voluntary basis in the cash-dependent and socially fragmented slum community. Community members as well as leaders always wanted to determine the personal benefit they would gain from participating in the project. The decision to source building materials and labor from the community helped to ease tensions regarding personal benefits.
- d) Funding: Raising adequate funding for multi-sectoral projects may be problematic because most funding institutions make their funding decisions according to specific sectors. Yet, the greatest promise in addressing the unique health challenges facing the urban poor may actually lie in demonstrating the cost effectiveness of minimum packages that address a cross-section of issues.

- e) Consortium management: Managing a consortium of several institutions has its own challenges because various institutions have their own program priorities and styles of work.
- f) Engaging the community with data: Using evidence from the DSS, it was easy to build community consensus in identifying priorities and resolving inter-village conflicts by citing specific development programs (like toilet facilities) and demonstrating inequities in access to such facilities across villages within the same slum community. Such transparency in decision making helps build community confidence in the innovation.

4.3F Appropriateness for scale-up

Potential appears high because of the strong monitoring and evaluation component, since one would be able to demonstrate to stakeholders that if you implement this package at this cost, this is the level of gain that you would achieve in terms of health as well as other outcomes.

4.4: Increased access to water supply through subsidized connections and licensing resellers in slum settlements (Société des Eaux de Côte d'Ivoire, Ivory Coast)

4.4A Innovation

Société des Eaux de Côte d'Ivoire (SODECI) is a private company providing water in all the cities and towns of Côte d'Ivoire, including over 600 small towns with populations of 1,000 to 20,000. The company partnered with the Central Government to generate financial resources for increasing access of tap water to the poor by having subsidized connections to poor households and licensing water resellers in informal settlements. SODECI's strategy of subsidized connections covers the low-income areas of both the large cities and the small towns. As a result of these efforts, Côte d'Ivoire has much higher household connection rates than its neighboring countries, and Abidjan has attained the highest connection rate in sub-Saharan Africa (other than South African cities): 10 household connections per 100 inhabitants.

4.4B. Detailed description

A significant proportion of the 3.3 million inhabitants of the city of Abidjan have low incomes and live in informal settlements established illegally on non-residential land. For 10 years the municipal authorities have considered, but have not implemented, official recognition of these areas. The government's Water Directorate, which provides water regulation and is responsible for tariff setting, controls a water development fund (FDE) to which SODECI can apply for capital finance to expand its services. Since the establishment of FDE in 1987, SODECI has implemented a clear policy for serving poor people. The three main elements of the policy are: to increase the connection rate among poor families through cross-subsidy; to make the water tariff affordable to low-volume users; and to extend a reasonable level of service into informal settlements.

SODECI implements this strategy by charging a connection fee to middle- and low-income customers of only US\$40, as opposed to the standard cost of US\$150. The difference between the actual cost and the fee is financed by FDE, which in turn obtains its money from a surtax on the water bills. Although similar subsidized connection policies exist in other African cities such as Dakar and Cotonou, they generally use subsidies funded by external support agencies, which makes them less extensive and sustainable. In contrast, the success of SODECI's subsidized connections policy comes from its reliable, internally generated funding source. Thus, household connections in Abidjan and other cities are not a premium service restricted to medium- and high-income families, but a basic service. The rate of coverage has steadily increased in the last 10 years; SODECI now serves 2.7 million people through household connections and another 0.3 million people through water resellers in informal settlements, leaving only 0.3 million people who obtain their water by other means such as public tap stands or dug wells.

This subsidy strategy applies to household connections but not to consumption charges. However, by having the highly valued basic amenity in the household, the poor are not only able to get clean water and consume according to

their budget, but they (particularly women and children) also save a lot of time previously spent fetching water from distant sources or in queues in the few distribution spots.

4.4C Process of implementation

SODECI applies three mechanisms to help the poor:

- Subsidized household connections (in effect, a recognition of water as a social good): The subsidy for the household connections comes from a surtax on water bills administered by a public-sector fund. This internal cross-subsidy avoids dependence on external funding sources, and can be maintained in the long term.
- A rising block tariff: Since the tariff is fixed across the country, it also boosts the finances, and hence the services, in the small towns from the stronger economic base of Abidjan.
- Licensed water resellers in informal settlements: The licensing of resellers in informal settlements enables SODECI to exert an indirect influence on the cost and quality of service in informal settlements where it is not allowed to operate directly.

In most large African cities, supplying informal settlements is a major problem for the water utilities. Their service contracts with the government or municipality often exclude those areas, because they are informal settlements. People in these settlements typically buy water from the few households with connections. SODECI decided to formalize this illegal practice by issuing special licenses to the resellers to over 1,000 suppliers. This strategy encourages small-scale providers to invest in network extensions where an unmet demand exists. Because of the rising block tariff structure, the resellers who sell a lot of water are forced to charge higher rates than what the households would be paying if they had direct connections to their households. The cost of becoming a reseller is also quite high (about US\$300), which explains why many resellers remain informal.

4.4D Feasibility, feasible improvements, and cost

The effectiveness of FDE as a tool to finance subsidized connections depends on the relative numbers of existing and new customers. In Abidjan, for example, the surtax paid by over 200,000 existing customers can easily finance the 15,000 new annual connections. On the other hand, this mechanism would be less viable in a city (such as Bamako, Kinshasa or Niamey) where few customers are connected. In such places, the new customers have to contribute more to their connection costs.

The eligibility criteria for subsidized household connections are not very restrictive. The subsidy is available to any household (but not to property investors or landlords) with less than five taps. The large majority of families in Abidjan fit these criteria and hence it is not surprising that subsidized connections represent more than 90% of total connections since 1987.

However, the strategy is not targeted at “the poorest of the poor”. A more targeted strategy would require stricter access criteria according to family incomes or the people’s physical location. Direct connections to the poor are limited by the fact that the subsidized connections are available only to families who can show legal land tenure (as owner-occupiers or legal renters). So they are not available to the inhabitants of informal settlements, who are some of the poorest people in the country and should logically constitute one of the main targets of the subsidized connections strategy.

4.4E Impact on health

There are no documented studies to show the impact of the program on health – though one would infer from the uniquely high proportion of households with tap water connected to their households that it does have an impact on the quality of water that the residents use.

4.4F Key lessons

- a) Private companies exist to make profits, not to serve the poor. However, the involvement of a private company in water supply can achieve both of these objectives if there is strong government commitment to ensure that the poor are served with the basic amenity. While some

other water companies have applied individual pro-poor strategies with some success, the key to SODECI’s approach is the simultaneous and coordinated application of three mechanisms.

- b) The cross-subsidy has been sustained over many years because the surtax is set and controlled by FDE. The rising block tariff is also publicly set, but serves SODECI’S commercial interests as well as the interests of the poor. The clarity of all these arrangements gives SODECI the confidence both to achieve its commercial aims and to serve poor people.
- c) In the debate over private sector involvement in water utilities, the concern of serving the poor is often used as an argument to keep the water company in the public sector. However, the example of SODECI shows that the best service for the poor in West Africa is provided by a company that was privatized a long time (46 years) ago and which has reached a high level of performance and investment capacity.
- d) The cross-subsidy principle is a powerful tool to promote household connections for low- and middle-income families. Following this policy, Abidjan has attained the highest Connection rate in sub-Saharan Africa (other than South Africa): 10 household connections per 100 inhabitants.

4.5 Supporting community-led housing infrastructure in Africa (Homeless International)

4.5A Innovation

One of the most innovative, extensive, and comprehensive initiatives to improve the well-being of the urban poor in the developing world is implemented by Homeless International (HI), a UK charity that supports community-led housing and infrastructure-related development in partnership with local partner organizations in Asia, Africa and Latin America. HI was established in 1989, following the 1987 United Nations International Year of Shelter for the Homeless. Initially formed as a trust, the organization became Homeless International,

and its permanent headquarters were established in Coventry, UK.⁶

All the initiatives supported by HI are implemented by local partner organizations that support community-based organizations. By supporting local organizations rather than implementing projects directly, HI is able to help build up local capacity and ensure the sustainability of the work. Many of the partner organizations and the communities they support are linked together in a network of slum- and shack-dwelling communities called Shack/Slum Dwellers International (SDI).

SDI is an international network of federations of the urban poor who share ideas and experiences, and support one another in gaining access to adequate land, infrastructure and housing. SDI brings together poor men and women from urban settlements, through national and international exchange visits, events and meetings to enable the rapid transfer of knowledge, experiences and skills directly between poor people in different countries. People living in poor communities learn to see their own situations in a new light, to share their own knowledge, and to learn from the experiences of others facing similar challenges. The lessons learnt are then adapted to the local context. Membership to SDI is voluntary and typically attracts like-minded national federations of the urban poor committed to a shared process of grassroots organization, problem solving, and solution sharing. An SDI Secretariat based in South Africa helps to coordinate the network's activities, but the primary focus of these activities is emphatically local. The strength of the SDI network lies in this combination of its local and global dimensions.

HI supports many of the federations which make up SDI, through partner organizations in Asia and Africa. HI's work in Africa seeks to address the following challenges arising from rapid urbanization and growing urban poverty:

- In many places there has been urbanization without economic growth, leading to growing unemployment, social exclusion and leaving the informal sector as the only escape from chronic urban poverty.
- Severe public health conditions in slums, leading to levels of infant deaths that are equal to, and sometimes worse than, those found in rural areas.
- The ongoing threat of eviction due to the lack of tenure security
- Inadequate housing and poor living conditions.

In Africa, HI community-driven processes are aimed at improving housing, access to land, security of tenure, basic services and many other dimensions of urban poverty in eight countries located in East, West and Southern Africa (Ghana, Kenya, Malawi, Namibia, South Africa, Zambia, and Zimbabwe).

The support from HI covers the following core areas:

- Provides grants to partners to support long- term community-based development initiatives.
- Provides financial services by scaling up access to credit for the poor through loans and guarantees.
- Conducts research, technical assistance and consultancy to explore long-term solutions to poverty.
- Conducts advocacy through sharing information and influencing policy.

4.5B Innovative activities

In the following table, we summarize the main activities that the African members of HI are working on in addressing various problems relating to urban poverty.

⁶ The summary about HI and its activities is derived from the institution's website: <http://www.homeless-international.org/> (accessed June 11, 2007).

Improving Urban Population Health Systems

CENTER FOR SUSTAINABLE URBAN DEVELOPMENT | JULY 15-20, 2007

Homeless International Partners and Projects in Africa			
Federation (Year started)	Focus of Activities	Where It Works (Urban areas)	Main Outcomes/Success
<p>Ghana Homeless People's Federation (2003) <i>Local partner: People's Dialogue Ghana, PGD</i></p>	Address mass eviction of people of the old Fadama settlement	Accra, Kumasi, Ashaiman, and Takoradi	<ul style="list-style-type: none"> • Details for settlement of slum community setup and reduction of forced mass evictions • Construction of sanitation facilities • Conferences held where slum dwellers dialogued with government and community leaders on strategies for improving housing • Establishing of an IGA (bakery business) which is run by the women)
<p>Pamoja Trust – Kenya (2000) <i>Local partner: Muungano wa wana vijiji</i></p>	To organize the poor to advocate for their rights and to resist forced evictions/land grabbing.	Many slum communities throughout Nairobi and many of the other urban areas in Kenya	<ul style="list-style-type: none"> • Runs savings schemes • Community enumeration, informs for research work/funding
<p>Malawi Homeless People's Federation (2003) <i>Local partner: Center for Community organization and Development, CCODE</i></p>	Savings on daily basis to improve the communities	Lilongwe and Blantyre	<ul style="list-style-type: none"> • Improving and simplifying access to clean water and sanitation • Signed an MOU with the Blantyre city assembly that then federation would be incorporated into the city's upgrading strategies • Enumeration of Blantyre's slums
<p><i>Shack Dwellers Federation of Namibia (1998)</i> <i>Local partner: Namibia Housing Action Group, NHAG</i></p>	To assist low-income housing groups	Informal settlements	<ul style="list-style-type: none"> • Creation of savings groups in all 13 regions of country by 2005 and saving >\$250,000 • Obtaining land for >100 households to develop • Securing land tenure for >2000 households
<p>South African Homeless People's Federation (2005) <i>Local partners: People's Dialogue on Land & Federation of the Urban Poor (FEDUP)</i></p>	Helping the communities to organize through establishment of savings and loan schemes	Active in all nine provinces	<ul style="list-style-type: none"> • Savings and credit schemes • Mapping and settlement enumeration exercises • Pilot housing and toilet developments

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<p>Zambia Homeless and Poor People's Federation (2001) Local partner: <i>People's Process on Housing and Poverty, PPHPZ</i></p>	<p>Nationwide network of collective savings groups started by poor families living in informal settlements</p>	<p>Lusaka</p>	<ul style="list-style-type: none"> • Formation of saving and credit groups for collective strength and organizational capacity, e.g., Saliswano Urban Poor Fund. • Enumerations and settlement mapping, to collect settlement-baseline information, particularly relating to housing, land and infrastructure, which is used to negotiate with local authorities. • Planning and building life-size model houses and toilets. • Sharing learning and mutual support, through a process of exchanges.
<p>Zimbabwe Homeless People's Federation (1998) Local partner: <i>Dialogue on Shelter</i></p>	<p>Network of community savings schemes made up of households living in poor urban communities across Zimbabwe</p>	<p>All over the country</p>	<ul style="list-style-type: none"> • Participation in community-to-community exchanges around the country • Household savings, often on a daily basis, to improve their housing and living conditions

Table 1: Programs implemented by Partners of Homeless International to improve the well-being of poor urban residents in West, East, and Southern Africa

Health impact: There are no assessments of the health impact of the HI interventions.

5. Non-Place-Based Interventions to Increase Access to Health Care for the Poor

Apart from interventions specifically aimed at improving the health status of the urban poor, various non-place-based government and non-governmental interventions to improve access to health care also benefit the urban poor. Indeed, African governments have adopted various strategies to ensure that health services are readily available to those in need, irrespective of their socioeconomic status. During the first couple of decades following independence (i.e., during most of the 1960s and 1970s), the primary focus of most governments was to expand the infrastructure for provision of health services. The services were provided free of charge since most of the population could not afford to pay for them.

The emphasis in provision of government services shifted somewhat in the 1970s as increasing attention was paid to enhancement of prevention of diseases through the Primary Health Care (PCH) approach. The PCH was introduced to address major causes of illness and focused on improving basic sanitation, nutrition, and strengthening health care services. However, the approach was never universally implemented, partly as a result of lack of resources for such a comprehensive package of interventions (World Health Organization, 2005). In the 1980s, vertical programs with narrower focus were implemented. Examples of such programs for child health include growth monitoring, oral rehydration therapy for diarrhea, breastfeeding and immunization (GOBI), the expanded program on immunization, and national programs for the control of diarrhea and acute respiratory infections. While these programs were successful in dealing with the targeted child health issues, the impact on child mortality was low. In the early 1990s, the World Health Organization and United Nations Children's Fund (UNICEF) introduced the Integrated Management of Childhood Illnesses (IMCI) approach whose main focus has evolved to include: improving health worker skills, improving health systems, and improving family and community practices.

Recent assessments of the IMCI approach show that there has been progress in implementation in at least 100 developing countries and that the community components and outreach are being strengthened in many countries (Community Integrated Management of Childhood Illness C-IMCI). However, there is still need to intensify efforts for universal coverage (Bryce et al., 2003). Some of the challenges in implementing proven interventions such as the C-IMCI for child survival in urban slum settlements are lack of knowledge of the local epidemiological profiles, the low capacity of public health care facilities, reliance on multiple and mostly informal medical services, weak community solidarity, and low commitment by local policy makers who often view slums as illegal settlements.

A major development that must have affected all poor people, including the urban poor, was the introduction of user fees in public health facilities in the 1980s. This was done in order to supplement budgets for social services (including education), which were endangered by poor economic performance. Below we summarize three case studies of experiences in introduction of user fees and efforts to improve access to health care among the most vulnerable and marginalized members of the population, which were studied by Bitrán and Giedion, (2003).

5.1 User fees and exemptions for the poor in Ghana

Due to economic difficulties and decline in government health spending both in real terms and as a percentage of total public expenditure, Ghana introduced user fees which specified fees for most services and called for full cost recovery for drugs in 1985. At the beginning of the program revenue generated from user fees by government health institutions went into a central government account, but this was changed later to allow facilities to retain the fees and use them to acquire medical supplies.

After realizing that the user fees marginalized the poor, waivers were later introduced, but the government did not give an explicit definition or mechanisms for identifying the "pauper". The program also provided for waivers and exemptions for health workers, for some

preventive and curative services for women and children (immunizations, pre- and postnatal care), and for patients with tuberculosis, leprosy, and mental disorders. Partial exemptions for patients suffering from a wide range of communicable diseases were also provided.

Even though no systematic monitoring systems exist, studies indicate that exemptions were seldom awarded. According to MOH data (Nyanator et al., 1996), only the blind or the mentally handicapped were deemed poor and were therefore exempted. Patient exemptions on the grounds of inability to pay were uncommon. Recent reviews by Garshong, (2001) and Coleman, (1997) show that health facilities are generally reluctant to provide waivers and they charge fees for services that are officially and universally free of charge. Exemptions were, thus, not only well defined by the health authorities and not well understood by the health workers. Most facilities did not have the social workers to identify poor patients, and the fact that many potential beneficiaries were unaware or misinformed about waivers compounded the problem. Finally, the program had limited results because of lack of supervision or monitoring of the process of exemptions and waivers. There were no sanctions or penalties to those who did not follow the guidelines.

5.2 User fees and exemptions in Zimbabwe

After Zimbabwe attained independence, real government spending for health increased rapidly. The peak on the health spending was in 1991. A structural adjustment program was launched in 1990 just before drought struck the country. The drought coupled with inadequate implementation of the adjustment program contributed to a decline in per capita health spending.

User fees that had been eliminated at independence were then reintroduced. Inflation weakened the real value of fees; hence there was an increase again, with the largest increases at the tertiary-level care facilities (World Bank, 1998). However, as was the case in many other countries, it was later realized that the user fees together with the referral policies accompanying it had reduced attendance without improving

referral efficiency; hence they were abolished in 1995, but only in rural health centers.

The government introduced the Social Development Fund, with two components, one of which was to assist poor households to cover school and health care fees. The waivers were to apply to those with monthly incomes below a set level. Potential beneficiaries went to the social welfare offices to justify why they needed to receive waivers, and those who qualified were given “free care letters,” which they presented at facilities to receive free care.

The user fees were found to have affected the poor negatively. Increased fees were criticized for not being associated with better quality services, especially when patients were charged irrespective of whether drugs or other supplies were provided to them. In the urban areas where protection mechanisms were supposedly in place to protect the poor against user fees, about 40% of the urban poor stated that the reason for not seeking health care at government facilities was the high price of services (Loewenson, 2000). Also, many poor people did not apply to program waivers because either they had not heard of the SDF or they did not know how to apply for waivers. By late 1993 only around one-half of the population had heard about the possibility of getting waivers through the SDF (Watkins, 1997). Many eligible persons seemed unwilling to apply because of the stigma associated with welfare benefits. Overall, only 20 percent of the urban poor and 10 percent of the rural poor received assistance with user fees (World Bank, 1998a). There is anecdotal evidence suggesting that some waivers were granted on the basis of political preference (e.g., depending on who was the political candidate favored by the applicant in the latest election). Finally, health facilities were often reluctant to grant waivers, as reimbursement mechanisms for waivers and exemptions did not work adequately.

5.3 User fees and exemptions for the poor in Kenya

Beginning with independence in 1963, Kenya committed itself to free public education and health care. Owing to the economic crises of the late 1980s, however, in 1989 the country

introduced cost-sharing policies to raise revenues in outpatient wards in hospitals and in health centers. The policies were brought about by a decline in government health spending and decline in donor support. Cost sharing was aimed at improving effectiveness and efficiency of health programs, generating more revenue for the health sector, improving the quality of healthcare, improving equity in the health delivery system and controlling expenditure in the public sector, or curative care (Kimalu et al, 2004; Bitrain and Giedion, 2003). Health care to children under five years old and maternal health services were exempted from user fees. Two years later maternity services were included. The poor were to benefit from waivers, and diseases such as tuberculosis were also exempted.

There was however evidence that user fees were adversely affecting access by the poor and that in some cases it may have had a negative impact on efficiency of health service provision. One study showed that the introduction of fees for patients attending Nairobi's Special Treatment Clinic for sexually transmitted diseases (STDs) resulted in a 40 percent drop in attendance by men and a 65 percent drop by women (Bitrain and Giedion, 2003). In an effort to mitigate the negative effects of user fees on access by the poor, the government introduced a system of exemptions for certain categories of persons or patients afflicted with certain illnesses. Health workers determine waivers locally and grant them to the poor on the basis of income and health status. Initially, local leaders and their assistants were in charge of screening and recommending patients for waivers. This process was however deemed prone to political interference and led to delays in treatment (Owino, 1999).

The problem of not having a well-defined program for increasing access to health care to the poor remains a major challenge in Kenya. In 2004, attempts to have legislation to form a National Social Health Insurance Scheme that would provide universal coverage for basic health care failed to pass through parliament. The current waiver system in the public health facilities still suffers from lack of well-defined criteria or a system for identifying the poor. In 2005, the Ministry of Health contracted APHRC

to carry out a study to develop guidelines and criteria for identifying the poor for hospital waivers, and the results of the study are still under discussion.

Key lessons

The following key lessons can be drawn from the review of introduction of user fees and experiences in providing waivers to protect the poor and enhance their access to health care in the three countries (Bitrán and Giedion, 2003):

- a) Limited information about the program and its benefits among health workers and prospective beneficiaries would hamper the effectiveness of the exemption system.
- b) The abolition of user fees may disillusion health care users and not boost demand among the poor if it is accompanied by a drop in quality.
- c) More research needs to be carried out to define objective criteria for determining people eligible for waivers. The income criterion may be difficult to apply in settings where most work in the informal sector and have irregular income, and where there are no information systems that might help to establish applicant eligibility. High participation costs, including stringent criteria for eligibility, would discourage the poor from applying for a waiver.
- d) In cases where non-public health providers participate in the program, there is need to establish an effective and timely system for reimbursing the providers.
- e) Allowing health facilities to use the user fees (or a portion of them) to order supplies and improve quality of services would give them incentives to manage the resources better.

6. Methodologies for Detecting and Documenting Health Vulnerabilities

There are several health information methods that are currently used to detect and document health vulnerabilities. These methods can be divided into two broad categories: facility-based methods and population-based methods.

6.1 Facility-Based Methods

Facility-based methods include routine data collection through the Health Management Information System, facility-based surveys (Hamid and Stephenson, 2006), and sentinel surveillance (Somi et al., 2006). The challenges with health-facility-based methods to detect and document urban health vulnerabilities, and therefore lead to effective control action are well documented (Arita et al., 2004). Only a small percentage of those with a given disease visit health facilities. In addition, reports from health facilities in most cases are incomplete because of poor supervision, lack of feedback to clinics for health workers to see the value of the information they collect, and due to heavy clinical workloads that health workers have. Surveillance data are usually more complete because they target particular diseases such as HIV/AIDS through antenatal clinics, or TB treatment programs, etc.

6.2 Population-based methods

Population-based methods include censuses, household surveys, vital registration systems, community event registers, and qualitative studies. Population-based methods can also be divided into those that are one-off, such as census and surveys, and those that provide repeat or longitudinal data, such as panel surveys, cohort studies, and longitudinal demographic surveillance systems. Censuses and surveys are less suited to detecting and documenting short-term urban health vulnerabilities, but very useful in monitoring changes in key indicators over a number of years if they are carried out regularly. Community registers are often incomplete and with suspect quality since they are often based on voluntary data collectors, while vital registration systems are underdeveloped in most parts of Africa. Longitudinal demographic surveillance systems that continuously collect, analyze and disseminate information hold better promise as a valuable tool for detection and documentation of urban health vulnerabilities in a manner that allows for effective and timely control action. Panel surveys carried out on regular intervals are also useful since they can help assess trends, are much cheaper and easier to manage than continuous longitudinal studies like the DSS, and can, therefore, be applied on a much wider

scale. In this section, we focus on two methods of detecting and documenting urban health vulnerabilities: demographic surveillance systems and panel surveys.

6.2a Longitudinal demographic surveillance systems

Demographic surveillance systems (DSS) are longitudinal population-based operations for following up individuals, their households and dwelling units over time and within a well-delineated area known as the Demographic Surveillance Area (DSA). There are currently two city-based urban demographic surveillance sites in Africa: Nairobi in Kenya and Ouagadougou in Burkina Faso⁷ although a few rural-based sites also cover small urban populations in their districts. “*Longitudinal*” measurement of demographic and health variables is one of the key characteristics of a DSS. It is achieved through repeated visits at more or less regular intervals to all residential and institutional units in the DSA during which a prescribed set of attribute data are collected on a group of registered subjects who are consistently and uniquely identified.

The example will focus on the Nairobi Urban Health and Demographic Surveillance System (NUHDSS). The NUHDSS is conducted in two slum communities of Nairobi, Viwandani and Korogocho, with a total population of about 60,000 individuals in 23,000 households. The NUHDSS’ main goal is to provide a platform for understanding linkages between urban poverty and health outcomes and to monitor and evaluate the impact of various interventions aimed at improving the well-being of the urban poor. The NUHDSS routinely registers and provides analytical data to understand migratory movements, pregnancies and fertility, mortality and causes of death through verbal autopsies, immunization, morbidity and utilization of health services, socioeconomic status and livelihoods, housing and environmental conditions, schooling, and marital status of all residents in

⁷ There are 37 demographic surveillance sites (DSS) in 19 different countries. Of this number, 26 sites are found in Africa, 9 sites in Asia, 1 in Oceania and 1 in Central America. (<http://www.indepth-network.org/>)

the two slums. The NUHDSS' operational costs are about \$370,000 per year.

The NUDSS platform is well suited to detect urban health vulnerabilities because of the following features:

- a) All households are visited at relatively short intervals (once every four months), which gives an opportunity to detect short-term outbreaks in diseases and effects of short term changes in economic conditions on health outcomes and vice-versa. The DSS can, thus, act as an **early warning system** for health authorities to detect outbreaks of disease, estimate any increases in demand of certain services due to demographic trends (e.g., increasing youth population) and provide population health analysis (e.g., increased incidence of drugs).
- b) Individuals and households and their experiences are followed and linked throughout time and space, allowing examination of causal linkages, which are very critical for impact evaluation
- c) Regular documentation of who is accessing various interventions, government services, and other experiences linked to the outcome variables but not to the interventions allows more precise measurement of the net impact of the reference interventions.
- d) Rigorous data quality checks and monitoring systems ensure more precise and reliable measurement of outcome variables (e.g., mortality and morbidity), variables measuring access to interventions (e.g., those immunized, those accessing care in improved health facilities versus the rest, etc.), and confounding factors.
- e) Disease burden profiles generated from morbidity, mortality and cause of death data can be used to inform the Ministry of Health on how to allocate resources based on disease burden. This has been done already in Tanzania to compare mortality burden estimates based on direct measurement of levels and causes in communities with indirect estimates based

on combining health facility cause-specific mortality structures with community measurement of mortality levels (Whiting et al., 2006).

- f) Identifying and evaluating critical intervention areas: The wealth of information on services, individuals, households, and the communities is very central to understanding key challenges that the urban poor are facing, which groups are most vulnerable, and the underlying causes of the vulnerability. The DSS can, thus, provide a sampling frame for identifying people to target for interventions, allowing comparison in outcomes between those exposed and not exposed to interventions. The DSS would also facilitate the documentation of the process, the impact on urban health vulnerabilities (even for government programs), including unintended impact of the interventions.

The main limitation of DSS frameworks is that due to their intensity and cost, they are implemented in few and localized areas, which may not be very typical of other settings, especially after prolonged surveillance and interventions. Due to the high level of population mobility and attrition in poor urban settlements (Zulu et al 2006), tracking individuals in long-term longitudinal studies is bound to be very difficult. Given the unique value of the surveillance systems, however, there is need to set up a number of sites like the NUHDSS in various countries, representing key urbanization, poverty, and health profiles in sub-Saharan Africa, so that the sites can provide a wider perspective of urban health vulnerabilities in the region. There should also be efforts, therefore, to have DSS sites in this case, carry out a comparison of DSS data with other data sources (such as surveys, censuses, and clinic based systems), which would provide an important validation point.

6.3 Longitudinal and cross-sectional health surveys

Longitudinal health surveys are surveys in which a cohort or group of individuals are recruited and followed up through periodic interviews over a

period of time. These surveys are ideal in cases where the group needs to be followed over a long period of time (usually more than 10 years) and the aim is to understand how experiences in younger age groups influence outcomes at later stages in their lives. Examples include the National Youth Surveys carried out in the USA.⁸ Another example is the National Population Health Survey that was designed to collect information on the health of the Canadian population and related socio-demographic information. It has been conducted every two years since 1994. It started with a population of 17,276 persons of all ages. Longitudinal health surveys have the advantage that they can be conducted on a much larger scale than the DSS because they are cheaper per unit of data collection. However, longitudinal surveys based on individuals are not widespread in Africa, whether rural or urban. The rare examples include a longitudinal study on diffusion, ideational change and reproductive behavior, which has been following people recruited in three rural districts in Malawi in 1988. The survey is carried out almost every two years and has expanded to examine sexual behavior and prevalence of HIV infection.⁹ A possible challenge is how to identify the same individuals over a long period, especially in countries where the use of a national identification document is not widespread and migration is common.

National cross-sectional surveys, such as the DHS, welfare monitoring surveys, MICS, etc., are the most commonly used source of data for monitoring national and major sub-location trends in health indicators in Africa. Such surveys are carried out in most African countries every 4 to 5 years. The main drawback of these surveys for understanding urban health vulnerabilities is that they do not distinguish

poor and non-poor urban settlements and often do not have adequate number of cases to analyze vulnerabilities in specific cities.

Cross-sectional surveys representative of city or slum populations can provide useful indicators for assessing urban health vulnerabilities. A classic example of such surveys is APHRC's ground-breaking Nairobi Cross-Sectional Slum Survey (NCSS). The survey was representative of all slum settlements in Nairobi city and asked questions similar to those asked in the DHS to allow comparison of the indicators between slum and various non-slum populations in Kenya. The survey showed huge inequities in various health outcomes between slum and non-slum dwellers in Kenya and has been presented and cited extensively to demonstrate the plight and unique vulnerability of slum dwellers not only in Kenya but in other comparable countries in sub-Saharan Africa as well. Conducting similar surveys in other cities in Africa would provide a strong advocacy tool for placing the plight of the urban poor on the priority list in tackling development issues in Africa.

Data from cross-sectional or longitudinal surveys focused on urban areas could be enriched by the Sample Vital Registration (SVR) with Verbal Autopsy (Setel, et al. 2005). This relatively new method involves recording of vital events (births, deaths, etc.) for a defined population and carrying out verbal autopsies for cases where there are deaths. If used alongside other health information systems, such as surveys or clinic-based systems, SVRs would provide an affordable, cost-effective, and sustainable short- and medium-term solution to the acute lack of vital registration system, especially data on the causes of death in Africa.

While many interventions do not have data to demonstrate their impact on health outcomes, as noted above, surveys can be key to demonstrate that improvements in sanitation services would reduce morbidity from infectious diseases. A rare occurrence of impact assessment was undertaken in a three-year hygiene promotion program in Bobo-Dioulasso, Burkina Faso (Curtis et al., 2001). A series of cross-sectional surveys carried out in the study community before and after the

⁸ Examples include: *National Longitudinal Survey of Youth, 1979* (<http://www.nber.org/~kling/surveys/NLSY79.html>; <http://www11.hrdc>); The National Survey of Children and Youth (drhc.gc.ca/pls/edd/NLSCY.shtml); The National Longitudinal Survey of Freshman (<http://nlsf.princeton.edu/>)

⁹ Further details of the longitudinal study are on: <http://www.malawi.pop.upenn.edu/>

introduction of the behavior change interventions showed that three-quarters of the mothers targeted had had contact with program activities and that half could cite the two main messages of the program correctly. Although practices related to the disposal of children's stools changed little between 1995 and 1998 (80% pre-intervention, 84% post intervention), hand-washing with soap after cleaning a child's bottom rose from 13% to 31%. The proportion of mothers who washed their hands with soap after using the latrine increased from 1% to 17%.

7. Key Recommendations

Doing nothing about the escalating urban poverty and health crisis in sub-Saharan Africa is not an option anymore, since the welfare and health of slum residents will undoubtedly have far-reaching consequences on poverty alleviation programs and the achievement of the Millennium Development Goals. With increasing population mobility and globalization, the health problems and associated social ills that are rampant in poor urban communities (such as drug abuse, insecurity) are likely to filter to the regional and global stages. Below we highlight key policy, program and research recommendations arising from this review of the urban health vulnerabilities in sub-Saharan Africa:

1. *Improving urban health vulnerabilities is not a quick fix.* It takes time, patience and more resources (human, material and financial). In the Benin example it took 18 months to create dialogue with the community, while the Senegalese one took close to 12 years to have tangible results. All the stakeholders involved need to up their nerves whether it be a financial, human or material commitment.
2. *Multi-sectoral approach:* Analyses of the major causes of poor health outcomes among the urban poor suggest that effective programs need to simultaneously address: issues of access, availability, and affordability of health services; environmental sanitation; improvement of personal hygiene; and livelihoods. The Rufisque, Ste Rita, and the Nairobi slum examples demonstrate the importance of having a multi-sectoral approach to addressing urban health vulnerabilities.
3. *Community participation:* Genuine and effective community involvement and ownership of the project is very important. After all, community members mostly know what needs to be done to address their problems, and what they need is encouragement and facilitation. To get genuine community participation in urban areas may be problematic, given the high level of social fragmentation and that fact that everyone has to strive to generate money for survival. That is why it is important that the innovations should be seen by the community as going beyond the specific health problems being addressed to include broader well-being livelihood concerns as well.
4. *Government participation:* The innovations reviewed in the study all had government participation. The government is very important to ensure long-term sustainability and ownership of the project. For example, the SODECI example demonstrated the central importance of having government backing in improving household water connections and provision of clean and affordable water to residents of informal communities.
5. *Funding of multi-sector approaches* is not yet main stream in many of the funding institutions. This is also true of many implementing institutions that tend to focus on a specific line of interventions. While focusing on a specific line of specialization (what is commonly known as a vertical program) is important, given the complex nature of urban health vulnerabilities, multi-sector approaches provide the best potential for success. The Nairobi example showed that implementation of a comprehensive and multi-sectoral innovation may be limited by donors' tendency to fund specific development areas. Yet, the future in addressing the continent's urban poverty and health crisis may well lie in the definition of minimum packages

- containing a range of interventions to address multiple problems.
6. The urban poor can also benefit from *non-place-based policies and programs* designed to assist all poor people, such as waiver of hospital fees. The effect of these programs is mostly limited by lack of clearly defined criteria for detecting eligible clients and poor flow of information about the program to potential clients and health workers. For these programs to be applicable to the urban poor, there is need to ensure that they have access to public health services
7. *Process documentation and impact evaluation:* Most reports for interventions lack important details that would help those trying to learn from the experience understand what was done and how the project was implemented. Detailed information on financial, physical, social, and human resources used in the implementation of the innovations was not readily available within the published literature. The impact (both positive and negative) of most innovations is not known because of lack of rigorous monitoring and evaluation capacities. In order to improve process documentation and impact evaluation in innovations, there is a need for partnership between research institutions and service delivery organizations, and for funders to be open to allow funding for evaluation.
8. *Methodologies for detecting urban health vulnerabilities:* The methodologies in evaluation pose a challenge, as they are not well developed to track and provide an evaluation of the impact of a multi-sector approach. Urban vulnerabilities come at once, are so interlinked, and those affected have to address them concurrently, irrespective of whether the line ministry is health, environment or education. While a few longitudinal demographic surveillance sites in major regions of the continent would help to derive results with wider applicability, triangulation with other sources (including clinic-based ones and longitudinal surveys) would provide a more complete platform for detecting and monitoring programs to address urban health vulnerabilities.

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